ABOUT THESE MAPS

Maps a, b and c show the at-sea density (birds/km^2) of Pink-footed Shearwater (*Puffinus creatopus*) in three ocean seasons – Upwelling, Oceanic, and Davidson Current, displayed in cells of 5' latitude by 5' longitude. Densities are based on the combined data sets of several studies; see the Data and Analyses section of this chapter. The color and mapping intervals were selected to show the most structure and highlight significant areas, while allowing comparisons among marine bird species. Cells that were surveyed but in which no Pink-footed Shearwaters were observed have a density of zero. Areas not surveyed appear white; no information was available for these areas. Blue lines indicate the boundaries of the National Marine Sanctuaries in the study area: Cordell Bank, Gulf of the Farallones and Monterey Bay. Bathymetric contours for the 200 m and 2,000 m isobaths are shown in light blue.

In order to provide an integrated look at the patterns of a species' spatial and temporal occurrence and abundance in the study area, map d shows seasonal high-use areas, displayed in cells of 10' latitude by 10' longitude, and also breeding colonies (when available). The seasonal high use map provides a further synthesis of densities presented in maps a, b and c, and portrays the relative importance of various areas to the species. Areas with consistently high use are highlighted. See the Data and Analyses section of this chapter for further explanation of high-use areas.

DATA SOURCES AND METHODS

The at-sea data set is referred to as the CDAS central California data set (1980-2001) and was developed using software called Marine Mammal and Seabird Computer Data Analysis System (CDAS), by the R.G. Ford Consulting Co. The data set extends from Pt. Arena to Pt. Sal in the study area, and the surveys used were conducted between 1980 and 2001. See the Data and Analyses section of this chapter for more information on the at-sea survey data sets and methods.

RESULTS AND DISCUSSION

The Pink-footed Shearwater occurs commonly in the study area. Surveys in CDAS (1980-2001) tallied 1,842 sightings of 4,553 individuals. A multiple regression model of nine independent variables explained 13.1% of the variation in its density. Important variables were season and inverse relationships with ocean depth and distance to land; see Table 3.8. Pink-footed Shearwater occurred in the study area during all three ocean seasons.

The Pink-footed and Sooty Shearwaters differed in their seasonal spatial occurrence patterns. When the two species overlapped in time (though the Pink-footed was most abundant during the Oceanic Season), the Pink-footed occurred over deeper waters (mean depth 725 ± 25 m). Competition between the two species may be a factor that explains these differences. This is best illustrated by the Pink-footed Shearwater's low relative densities in inner Monterey Bay, where there are deep waters but where the Sooty Shearwater is especially abundant. Like the Sooty Shearwater, abundance of the Pink-footed shearwater has decreased in the study area between 1985 and 2002.

Pink-footed Shearwaters feed on fishes, squid and invertebrates that they acquire by pursuit plunging to a depth of 5-10 m. Often they feed in association with albacore (*Thunnus albacares*). See Tables 3.5, 3.9, 3.10 and 3.11 for related summary information.